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TA-53 Facility Management

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LANSCE Facility Implementing Requirement

Engineering Change Notice

53FIR 240-01.00

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1. Introduction

1.1 Background

LIR240-01-01 requires that each Facility Management Unit (FMU) develop, implement, and maintain a configuration management (CM) program. This LIR requires FMUs to develop and implement 1) facility baselining, 2) information management systems, 3) change control, and 4) assessments. Additionally, LANSCE division has issued a policy toward these same requirements.

1.2 Purpose

The purpose of this procedure is to meet the requirements of a change control program as it relates to facility hardware modifications including the control of facility and nuclear program design changes and documents. This procedure establishes a formal system to develop, review, and approve design changes to facility and programmatic equipment. It also provides a mechanism for the documentation, control, tracking, and implementation of drawing updates.

1.3 Scope

This procedure applies to the revision of controlled engineering drawings, sketches, calculations, and specifications. This procedure is, as well, applicable to the development of drawing as-builts for modification work and design changes. Applicable program systems design changes in nuclear areas (e.g., 1L Target) are also to utilize this procedure and form. All Facility ML-2 systems and components, as identified in the facility Master Equipment List, and all safety significant systems and components in the 1L Target nuclear areas, as defined in the BIO, are to utilize this procedure. This procedure is not intended for use with experimental systems. Applicability to facility systems and components follows a 30 day implementation period.

2. Acronyms and Definitions

2.1 Acronyms

DCC	Document Control Coordinator
ECN	Engineering Change Notice
FCADS	Facility Configuration and Data Services
FDD	Facility Design Description
FM	Facility Manager
FMU	Facility Management Unit
FORC	Facility Operations Review Committee
FWO-FE	Facility and Waster Operations – Facility Engineering
MDL	Master Document List
ML	Management Level
NOM	Nuclear Operations Manager
RE	Responsible Engineer
SAR	Safety Analysis Report
SSC	Structures, Systems, or Components

SDD System Design Description

2.2 Definitions

Design Authority. Assigned senior engineer responsible for technical oversight and approval of all ECNs developed. Design authorities are assigned by the Facility Manager or Nuclear Operations Manager.

Engineering Change Notice. Two sheet traveler for initiating, developing, approving designs and implementing drawing revisions.

Master Document List. A list of documents, containing, at a minimum, the information necessary to adequately control the facility controlled documents and index records. The master document list is an electronic database containing the status of documents and provides for timely retrieval of documents and records.

2.3 Required Training

Personnel who develop, review, approve ECNs or drawings shall read this procedure. Training to this procedure is read-only and no documentation is required.

3. Responsibilities

3.1 Design Authority

- Final review for technical adequacy and completeness of the ECN.
- Ensures that documents are prepared and revised in accordance with this procedure.
- Serves as the document approval authority for new documents and major changes, which are not reviewed by the Facility Manager or the Facility Operations Review Committee (FORC). Approval authority may be delegated.
- Serves as the document approval authority for minor changes to owned documents.

3.2 Responsible Engineer

- Obtain ECN number in accordance with this procedure and enter into the ECN form.
- Development, coordination, and processing of the ECN in accordance with the instructions in this procedure.
- Technical accuracy and suitability of the subject change.
- Initiate and track changes to impacted documents not revised by the ECN (see block 6a of the ECN).
- Review of installed ECNs and verification of completeness and accuracy (for temporary and permanent installations).

3.3 Facility Manager (or designee)

- Approval of each ECN prior to construction/implementation.

3.4 Nuclear Operations Manager (or designee)

- Approval prior to construction/implementation of each ECN that affects a system within the nuclear boundaries as defined in the Facility Safety Plan (FSP) or other authorization documents (i.e. BIO).

3.5 FCADS Team Leader

- Manage receipt and control of ECNs and associated MDL updates.
- Coordinate design/drafting efforts to provide timely ECN incorporation into impacted design drawings in accord to facility requirements and guidance.

3.6 Independent Design Reviewer

- Performance of in-scope technical reviews of ECN packages as required. The independent design reviewer shall not have been directly involved in the development of the ECN and associated design approach and associated documentation.

3.7 Document Control Coordinator

- Provides day-to-day interface between FCADS and the requesting organization, eg, facility.
- Maintains an ECN log and tracks ECN through-out the development and implementation process.
- Ensure safekeeping of the ECN original.
- Conducts an annual audit to inventory ECNs and their status/location (no documentation of the audit is required).

3.8 Reviewers (as specified)

- Performs technical and management reviews of required documents.
- Works with the preparer to resolve all noted comments.

4. Hazards and Controls

- Not applicable.

5. Equipment and Supplies

- Not applicable

6. Procedural Steps

6.1 ECN Development and Processing

6.1.1 Each ECN shall be developed using the attached form and processed in accordance with the following process flow diagram and associated instructions.

Action	Description
Step 1 Initiate ECN	Requesting organization to identify need and contact system owner. System owner to assign Responsible Engineer (RE) who will initiate the ECN (complete section 2, of the ECN in accordance with the instructions on the back of the form. FWO-FE-FCADS shall provide ECN no. to RE upon request.
Step 2 Develop design and perform technical review	RE to develop and/or coordinate the development of the design (complete sections 3, 4, 5, and 6 of the ECN in accordance with the instructions on the back of the ECN form. After development of the design, the RE shall coordinate performance of technical / independent reviews from FWO-FE and/or other institutional support organizations as required (ie, Design Authority, and Independent Design Review sign-offs on section 7a of the ECN).
Step 3 Perform USQ/D	If a USQ/D process is required (per block 2e), the RE shall coordinate the performance in accordance with controlling procedures by the requesting/owning organization. The RE shall enter the number of the USQ/D in the space provided (block 2e) and attached the completed USQ/D to the ECN package.
Step 4 Perform management review	RE to coordinate performance of management reviews by the requesting/owning organization as required. (ie, Facility Management and Nuclear Operations Manager (if applicable) sign-off on section 7a of the ECN).
Step 5 Post pending changes in MDL and stage for construction	After design approval, the RE shall submit the original ECN package to the Document Control Coordinator (DCC) for logging and control. Working with/through the DCC, the FWO-FE-FCADS Team Leader (or his designee) shall post the ECN against the impacted drawings in the Master Document List. The ECN shall be posted against the drawings as a pending change.
Step 6 Maintain ECN until requested for construction	Working with/through the DCC, the FWO-FE-FCADS Team Leader (or his designee) shall file and maintain the approved original of ECN until requested by the facility for construction/ implementation.
Step 7 Perform construction, post-mod testing, and acceptance	Using the Work Control or Safe Work Practices process, the requesting organization shall install the modification per the ECN requirements. The requesting organization shall also perform post modification testing and acceptance. The FM or designee shall record the implementing work orders in block 7b. Upon completion of the package and sign-off by the FM or designee (per block 7a of the ECN), the RE shall review final installation for completeness and verity that it is suitable for close-out by signing block 7c.
Step 8 Capture and maintain completed ECN	The DCC shall transmit the completed ECN package to FCADS for longterm storage and control. FCADs shall update the MDL to indicate that the subject ECN has been installed.
Step 9 Revise and re-issue affected documents	Using the MDL as the controlling list, FCADS shall routinely review and identify drawings that require revisions. FCADS shall coordinate the roll up ECNs into impacted drawings and reissue them as the next revision. FCADS shall also update the MDL to reflect the latest drawing revision and incorporation of outstanding ECNs. FCADS shall close-out the ECN and is responsible for long term records storage.
Step 10 ECN Close-Out	The FCADS Team Leader shall close-out the ECN and is responsible for long term records storage.

7. Required Records

- Original signed copy of the ECN
- Master Document List (on-line)

8. References

- LIR240.01.01.1, Facility Configuration Management
- FWOFE-QMP-401, Document Control and Records Management

9. Attachments

Engineering Change Notice Form

LANSCE 53 FIR 240-01.00	***Engineering Change Notice Form***	[1a.] **ECN:** 53 -____-_____ [1b.] **Page:** ___ of ___ [1c.] **Date:** _____

[2a.] *ECN Category (mark one)*	[2b.] *Project Number/Project Title*		[2c.] *Management Level*
[ ] Initial Issue [ ] As-Built (n/a 7b and 7c) [ ] Supplemental [ ] Direct Revision [ ] Temporary Expiration: _____ [ ] Supercede [ ] Cancel/Void			[ ] ML2; [ ] ML3; [ ] ML4
	[2d.] *Responsible Engineer (RE), Org, and Telephone (RE to initial/date)*		[2e.] *USQ Required?* [ ] No; [ ] Yes _____
	[2f.] *Building/System*	[2g.] *Related ECN No.(s)*	[2h.] *Independent Design Review* [ ] No; [ ] Yes (if ML2)

[3a.] *Design Pre-Planning*	*Comment*
[ ] Conceptual Design [ ] Conduct Walkdown [ ] Rad Design Review (Re: LIR402-705-1) [ ] Air Quality Review (Re: LIR404-10-01) [ ] Other:	
[3b.] *Design Inputs* [ ] National Codes [ ] LANL Facility Engineering Manual [ ] LANL Construction Standards [ ] LANL O&M Criterion [ ] Regulatory Requirements [ ] Vendor Information [ ] Other:	*Comment*
[3c.] *Design Analysis & Calculations*	*Comment*
[3d.] *System Interfaces*	*Comment*

[4a.] *Impacted Documents (to be revised by this ECN)*		[4b.] *Budget* NTE Cost $ _____	
Document Number	*Revision*	*Document Number*	*Revision*

LANSCE 53 FIR 240-01.00	***Engineering Change Notice*** **Form**	[1a.] **ECN:** 53 -____-_____ [1b.] **Page:** ___ of ___ [1c.] **Date:** _____

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1.0 ECN Number and Pagination

1a. ECN. Obtain a sequential ECN number from FWO-FE-FCADS (667-4696) (TA number, calendar year requested, and sequential Engineering Change Notice (ECN) number) and enter in the space provided. Note that ECNs do not have a revision number. Revisions to ECN changes must be processed with a new ECN (see block 2a below).

1b. Page. Include page number and total number of pages

1c. Date. Enter the origination date of the ECN.

2.0 ECN Information

2a. ECN Category. Check one or more boxes to indicate the ECN category (as defined below):

- Initial Issue. Is the first issue of the subject modification.
- As-built. Revision of drawing to reflect as-built conditions only, no physical modifications to occur.
- Supplemental. Adds additional changes/information to an existing ECN.
- Direct Revision. Changes one or more drawing revisions from a previous ECN.
- Temporary. Change is for a temporary configuration with a finite installation life. The installation life shall be identified in the space provided.
- Supercede. Change completely supercedes a previous ECN.
- Cancel/Void. Change cancels a previous ECN.

2b. Project Number/Project Title. Enter the project number (PI number or Lab Job number) and/or title for the subject change.

2c. Management Level. Identify the highest management level activity/SSC associated with the subject ECN (typically identified in the MEL). Management Levels are defined per LIR230-04-01.

2d. Responsible Engineer (RE), Organization, and Telephone. Enter the name, organization, and telephone number of the ECN originator, hereinafter referred to as the RE. The RE shall initial/date the final ECN to signify that it is complete and technically accurate to the best of his/her knowledge prior to submitting it for review and approval.

2e. USQ Required? Check Yes or No to indicate whether a USQ screening/review process is required. See LIR300-00-06, "Nuclear Facility Safety Authorization," guidance. Also see 53 FIR 300-00-02 Unreviewed Safety Questions Process. Include USQ number and attached an approved copy to the ECN.

2f. Building/System. Enter the building number(s) and hardware/software system(s) that the subject change directly impacts.

2g. Related ECN No.(s). Enter the number of the ECN(s) directly affected by this ECN. Affected ECNs must be listed in this block if the subject ECN is categorized as Supplement, Direct Revision, Supercede, or Cancel/Void per block 2a.

2h. Independent Design Review. Check off the appropriate box to specify if an independent design review is required to be performed. If the subject ECN is classified as ML-2, an independent design review is required to be. If the ECN is ML-3 or ML-4, a design review may be performed at the discretion of the RE, Design Authority, or FM

3.0 ECN Pre-Planning and Design Criteria

3a. Design Pre-Planning. Identify required actions for design pre-planning. Provide details and explanation as appropriate in the associated comment section.

3b. Design Inputs. Identify required design inputs to be applied to the design process. Provide details and explanation as appropriate in the associated comment section.

3c. Design Analysis & Calculations. Identify design and analysis and calculations that have been developed or revised in support of this ECN. Provide details and explanation as appropriate in the associated comment section.

3d. System Interfaces. Identify all facility/programmatic systems that interface with the system directly impacted by this ECN (see block 2f). List each interfacing system by acronym and name. Provide details and explanation of the issues and concerns relating to the interfacing systems and how they are addressed by the design in the associated comment section.

4.0 Documents Revised by ECN

4a. Impacted Documents (to be revised by ECN). Enter the number and revision of all the documents to be revised by this ECN. Each document to be revised must be listed on the FMU-specific Master Document List (MDL). Each listed document with the proposed revisions shall be included in the ECN package. Proposed revisions shall be developed using sheet 5 of this ECN form.

4b. Budget. If known, the RE may place the estimated not-to-exceed (NTE) cost to revise the impacted documents and record in the space provided. Where applicable, the RE shall also enter the cost center, program code, cost account, and work package number for development and issuance of the drawing at time of revisions.

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[5a.] *Description of Change*

[5b.] *Justification (mark one)*

[ ] Criteria Change	[ ] Design Improvement	[ ] Environmental	[ ] Facility Deactivation
[ ] As-found	[ ] Facilitate Cost	[ ] Error/Omission	[ ] Other:

[5c.] *Justification Details*

[6a.] *Change Impact Review*

[ ] Procedures	[ ] Facility Safety Plan	[ ] Master Equipment List	[ ] None
[ ]	[ ] FDD/SDD	[ ] SAR	[ ] Other:

[6b.] *List Affected Documents (not to be revised by this ECN)*

Document Number / Revision	*Document Number / Revision*

[7a.] *Design Approvals (ECN Approved for construction/implementation)*

Signature / Date	*Other:* *Signature / Date*
Design Authority:	
FM (or designee):	
NOM (if applicable):	
Ind. Design Reviewer:	

[7b.] *Implementing Work Order(s):*

[7c.] *ECN Close-Out (Modification Work Complete)*	*(Temporary ECN restored to original base-line condition)*
Responsible Engineer:	Responsible Engineer:

[8a.] *FCADS Actions* *(MDL updated with pending drawing changes)*	*(ECN incorporated into impacted drawings)*
FCADS Team Leader:	

LANSCE 53 FIR 240-01.00	***Engineering Change Notice*** **Form**	[1a.] **ECN:** 53 -____-_____ [1b.] **Page:** ___ of ___ [1c.] **Date:** _____

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5.0 Description of Change

5a. Description of Change. Provide a brief description of the change. Refer to other explanatory documents as appropriate, e.g., conceptual design, feasibility studies, etc.

5b. Justification. Check-off the applicable box to denote the justification of the change.

5c. Justification Details. Briefly summarize the justification for the subject ECN.

6.0 Documents Not Revised by ECN

6a. Change Impact Review. Check one or more boxes to identify other documents that are directly impacted by the modification but will not be revised per the ECN.

6b. List Affected Documents (not to be revised by ECN). List by number and revision the documents that must be revised based on the Change Impact Review (per block 6a). It is the responsibility of the ECN RE to initiate and track revision of these documents.

7.0 ECN Approvals

7a. Design Approvals. After completion of the design and prior to procurement, scheduling, and construction, obtain the proper level of review and approval.

- Design Authority. Required for all ECNs.
- Facility Manager (or designee). Required for all ECNs.
- Nuclear Operations Manager (if required). This signature is required for changes effecting any system inside a nuclear boundary as defined in the FSP (BIO).
- Independent Design Review. Required for all ECNs that directly modify ML-2 SSCs (per block 2c)
- Other. As required approvals based on impacted systems and related LANL requirements. For example:
  - Air Quality / Stack Monitors: ESH-17 (Re: LIR404-10-01)
  - Air Emissions Equipment (e.g., boilers, diesel generators, tanks): ESH-17 (Re: LIR404-10-01)
  - Fire Protection/Suppression Systems: FWO-FIRE (Re: LIR402-910-01)
  - Hoods and Gloveboxes: ESH-5
  - Radiation levels and monitoring/alarms: ESH-12 (Re: LIR402-705-01)
  - Site Utilities: FWO-UI

7b. Implementing Work Order No(s). If the work is modification related, the FM designee shall enter the CMMS work order(s) assigned to construct the subject modification work. Mark this section N/A if the ECN is not related to modification work.

7c. ECN Close-Out.

- *Modification Work Complete.* If the work is modification (ie, requires field construction), the RE shall sign and date when it has been completed. The RE shall verify that the work has been completed in accordance with the requirements of the ECN. Mark this section N/A if the ECN is not related to modification work.
- *Temporary ECN restored to original base-line condition.* If the work is categorized as Temporary (per block 2a), the RE shall sign and date when completed to verify that it has been restored to its original condition. Mark this section N/A if the ECN is not Temporary.

8.0 Completion of Document Updates

8a. FCADS Actions.

- *MDL updated with pending drawing changes.* After approval of the ECN for implementation, the FCADS Team Leader shall ensure that the Master Document List (MDL) is revised to reflect the pending changes for the impacted documents.
- *ECN incorporated into impacted drawings.* After receipt of the completed ECN, the FWO-FE-FCADS organization shall coordinate the incorporation of approved drawing changes and re-issue the updated documents. FCADS shall update the MDL accordingly to reflect the latest drawing revision. The FCADS Team Leader (or his designee) shall sign and date signifying that all required actions are complete and the package is suitable for close-out and archive.

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Engineering Change Notice Continuation Sheet

Continuation Sheet

This continuation sheet shall be used to guide/govern field construction and document each drawing revision. Include the following for each document to be revised:

For drawings, include a copy of the drawing section (latest revision) to be revised on ECN Continuation Sheet. At the top of the ECN page, list the number and revision of the drawing and state EXISTING after it. For example: "ENG-C-87659 R3, EXISTING:"

On a separate ECN Continuation Sheet (immediately after the sheet depicting the EXISTING condition), include a revised copy of the drawing section that depicts the changes to be implemented by this ECN. Cloud each drawing accordingly to identify the revised section(s). At the top of the ECN page, list the number of the drawing and state REVISED TO after it. For example: "ENG-C-87659, REVISED TO:".